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ABSTRACT

The paper examines an exemplary special education school for the handicapped in Peru and describes the school's success in training children in primary education and basic work skills. A rate of return for the investment in the school is calculated using cost-benefit analysis. The results are noted to indicate a conservative estimate of 10% return for the investment. Compared to the typical return on industrial investments in South America, this return in special education is seen as an attractive alternative for the use of public funds. (Author/SBH)

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The Economics of Special Education in a Developing Country

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Abstract

Leaders in developing countries have difficult choices to make in allocation of limited funds available for the development of resources. Historically, education of the handicapped has not been a priority. This study examines an exemplary Special Education school for the handicapped in Peru; describing its' ~~sources~~ success in training children in primary education and basic work skills. A rate of return for the investment in this school is calculated, using cost-benefit analysis. The results indicate a conservative estimate of 10 percent annual return for the investment. Compared to the typical return on industrial investments in South America, this return in Special Education is an attractive alternative for the use of public funds.

The Economics of Special Education in a Developing Country

The basic economic problem of most developing nations is not a poverty of natural resources, but the underdevelopment of their human capital. However, relatively few developing countries are able to provide sufficient funds to offer the full range of educational facilities to which they might aspire. Thus, nations have to make choices in the utilization of limited means for human resource development, according to national priorities.

In the developing countries, despite substantial investment in education, only a small portion of the handicapped are currently receiving educational services. The vast majority are likely to become unemployable adults who will often require personal care from family members. This significant loss in human capital could be prevented by investment in an educational program whose benefits to society exceed its costs.

The operation of a special school for handicapped children in Peru illustrates this point. This Peruvian school provides an instructional program and a sheltered workshop for moderate and severely retarded children, several psychotic and autistic students and one class for deaf children. It is the purpose of this paper to describe the school and its activities; to discuss the economic efficiency of the school in terms of benefit and cost and; to briefly consider the economic benefits for other developing countries which

might divert more of their resources for education of handicapped children, if the investment return is known.

Description of the School

The Escuela Especial 'Carlos A. Manucci' in Trujillo, Peru came into being ten years ago as a private school to provide special education to the handicapped child of a prominent Peruvian family. This special school has developed from that small beginning to an exemplary and unique program for children with a variety of handicapping conditions. Today, the school enjoys support both by government funds through the Peruvian Ministry of Education as well as from private sources.

When the school was founded, it was housed in an inadequate building in a suburb of Trujillo, but has now moved to a new structure within the city very much on the order of modern European and American schools, with open corridors and large spacious classrooms, a good playground area, a gymnasium, a special room for deaf children, and a large area for infant and parent programs. The outdoor area is suitable for daily gymnastics, enabling the director to simultaneously conduct psychomotor activities for the 80 children enrolled, according to age and level of development.

Most of the children are referred by their parents, friends, or neighbors. A few are referred by medical people. Their socioeconomic background ranges from abject poverty to the most economically privileged families. There is no charge for tuition but

parents are encouraged to pay for lunch, transportation and instructional supplies in accordance with their ability to pay. Some families make significant contributions to the school.

A majority of the children would be classified as moderately to severely handicapped. Most of them are either mentally retarded, severely emotionally disturbed, or autistic. The predominent number of children are mentally retarded. A number of them have Down's syndrome, while others appear to have signs of neurological or brain damage. None of these children could have functioned successfully in an ordinary school situation prior to an extensive period in this school for rehabilitation.

The Manucci School has a self-contained primary program. The children come at 8:30 AM and stay until 3:30 PM. The school curriculum and environment can be best described as a carefully sequenced program emphasizing behavior, communication, socialization and academics (Alegria, 1976; Hiers, 1977; and Wood, 1975). It is based upon the viewpoint that certain tasks are universally applicable to the cognitive, social, emotional, and physical growth of all children - handicapped or not. The curriculum emphasizes particularly psychomotor and preacademic development, to stimulate physical coordination, attention, and task success. There are no restraining rooms or

other forms of punishment used in this program. Children are taught every skill needed in order to function in a socially appropriate way. The techniques most often used by the teachers include touch and verbal arousal, imitation of adults, structure, and group activities. Among the most beneficial activities are the programs in music, gymnastics, movement, dance, drama, and art. These creative activities appear to stimulate all areas of development: mental, physical, emotional, and social.

In addition, children learn social skills by helping each other and aiding in the daily school routine. For example, the more advanced children help the less able children. Each is assigned the responsibility of being a teacher to a younger child and helping that younger child meet success with each task. Teenage children also work in the kitchens before lunch preparing food with the school cook. They assist the cook by setting the tables, serving, removing chairs, cleaning up afterwards, and putting the room in order following the lunch period.

In rating the overall quality of the school one can cite staff preparedness and the training provided to the eight teachers by the director. Staff morale is very high. Each teacher has a sense of accomplishment in working with these children and a sense of her own skill and ability. These skills and activities are the result of the quality of the staff training each teacher has received on the job. The teachers in turn convey the belief that each student is a worthy individual and has potential. They have

warmth and responsiveness to children and an orientation toward bringing out desirable social qualities in each child and developing each child's skills to whatever level of work the child is able to perform.

The success of the school is measured in the level of normalcy portrayed in the children, and the acclaim it has received in the community and from the parents. In the past, the expectation for performance from handicapped children in Peru has not been generally high. Therefore, it is significant when the parents of these handicapped children recognize that through schooling their children can become productive members of the community. It is astounding to see children who were untestable by the usual psychological instruments to be functioning cooperatively and in tasks at levels far beyond ordinary expectations. Several of the children have been so successful in their development that they now hold jobs in the community. These children return on their own to visit the Manucci school to share their new successes with the teachers. For the children unable to work independently in the community, the school's workshop serves as a vocational training center and as contractor for jobs suited to their skill levels. For example, a number of the older children are employed by the workshop on a long term basis to construct chicken crates for local producers. The level of socialization and functional achievements of such a handicapped group of individuals is particularly noteworthy when

you realize that there is no psychological or social work assistance

This school clearly has demonstrated that severely limited individuals can become productive citizens who will be able to contribute to their own support; that these handicapped individuals are brought to a level of functioning where they can perform work in the community, such as weaving, food preparation, simple carpentry, clerical work, etc. The alternative to special schooling for these handicapped children is nearly certain unemployment in later life, and, in many cases, the loss of working time by another family member required to care for them. At the present level of Peruvian economic development, even the severely handicapped, with appropriate educational and vocational training, have an excellent opportunity to become at least partially self-supporting.

Economic Efficiency of the School

One task of leaders in the world's developing countries is to select among alternative governmental expenditures those which will product the greatest benefits to the country. For example, it is often necessary in developing countries to devote large sums of money to the development of industry and agriculture in order to improve the low living standards of a large part of the population. Public expenditures are also required to meet high priority social programs, such as better housing, health care, and improved sanitation services. The scope and variety of beneficial programs

competing for limited public revenues in developing countries demand the effective allocation of these funds. The benefits to society from the last peso or sol spent for any type of education must be weighed against the alternative benefits which could be derived from investing that money to other social or economic programs.

Considering this constraint, would it then be a good investment for governments in developing countries to use public funds to replicate the Manucci school model? To answer this question it is necessary to utilize a technique for comparing the return from such an educational investment with alternative uses for public funds. Such a comparison can be made by use of "rate of return" analysis.

Rate of return analysis is simply a method used to identify and to measure the benefits and costs that would result from alternative investments. As a technique and method of evaluation, rate of return analysis has been used increasingly in the 1970's to evaluate the effectiveness of educational programs in many countries (Psacharopoulos, 1973).

The rate of return on the Manucci school is a summary statistic describing the relationship between the costs and benefits associated with investment in the school.[1] The expected net benefits per year from the Manucci school are calculated here comparing total costs and total benefits in order to derive net

benefits.

Costs. Direct operating costs of $18,000 per year include: the salaries of teachers and aides; the wages of other service personnel (cook, janitor, etc.); the cost of instructional material; food for the noon meal; uniforms; and the cost of transporting children. Capital costs of $20,400 include the implied rent and depreciation charges on the school buildings, and are determined by calculating the value of the buildings and taking 13 percent (ten percent rent plus three percent depreciation) of the value of the buildings. The annual cost of school-owned land is also included in the capital costs by taking ten percent of its value per year.

Total costs are calculated on the basis of an average of six years of attendence per student, as that has been the experience since the school started ten years ago. There is no formal length to this primary program. Students remain in it until they have achieved their potential im primary education and are ready for work in the sheltered workshop or outside of the school.

One significant cost factor in most educational programs is the income foregone from work by students while attending school. Carnoy, (1967) in his study of Mexican education, found foregone earnings to be significant for students as young as eight years old. We have estimated foregone earnings as zero, because the handicapped children in the Manucci school would not be capable of productive work without the special schooling. More realisti-

cally, the majority of these children would require a family member to care for them if they were not in school. This family member might then forego employment opportunities in order to care for the handicapped.

Benefits. The investment benefits from the Manucci school are represented by the estimated increase in income of the student and his family resulting from six years of special schooling. The school program has enabled handicapped children to be brought to a level of functioning where they can either compete for jobs with a portion of the non-handicapped workforce or perform constructive household tasks in their own home, such as cleaning, cooking, sewing, routine maintenance, etc. Because these students enter the school as moderately or severely handicapped, this work capability would not develop without the special schooling. We have estimated the monetary value of this work ability for a typical student either within or outside the home as $300 per year which is equivalent to one-half of the annual income of a non-handicapped maid.[2] This calculation of their income is conservative. Some graduates are currently employed at higher paying jobs (teacher's aide, musician, clerical work), but our estimate would be typical for the majority of students.

Another benefit of the special schooling to the families of these handicapped children must also be considered in order to obtain an accurate estimate of the school's value. Without this

remedial schooling it is estimated that at least one-half of these children would not only be unable to do household work, but would also require someone in the home to care for their personal needs. Again, a conservative estimate of the monetary value of that care, which is not required because of the remedial schooling, is calculated as being equivalent to $300 per year, or one-half of the annual income of a non-handicapped maid.

Our assumption is that graduates of the Manucci school will have a working life of thirty years, because the physical health of these children indicates that their probability for survival is as good as that of the non-handicapped population.

Economists recognize that the benefits from education, based on earnings alone are underestimated, and refer only to the investment component of education. Other benefits that flow from education, include: the psychological benefits to the individual; the creation of an informed electorate; good mental health; improved hygiene and nutrition; the socialization of younger members of society, etc. At present such benefits are not quantifiable and cannot be included in this type of analysis.[3]

Adjustments In The Rate Of Return. Rates of return to investment in education are sometimes labeled as "adjusted" or "unadjusted." In the following section, we examine what the necessary adjustments are, how they are treated in our study, and how they affect the rate of return for the Manucci school.

a. Labor force participation and unemployment.

In calculating the rate of return to schooling, it is usual to make adjustments for the fact that not all who complete a school program will want to work or be able to find work if desired. In estimating the rate of return for the Manucci school we have made the assumption that graduates who do not find wage employment will perform useful household tasks equivalent in value to the work of a one-half time non-handicapped maid. Based on the experience of the school over a ten year period, approximately three percent of those who complete the school would not be able to even perform household tasks, and the estimated rate of return has been adjusted downward, based on that information.

b. Increases in productivity.

An adjustment that would increase the rate of return is the expected future increases in productivity. For example, in recent years, through 1974, Peru's real growth in Gross National Product was near six percent while annual population growth was three percent (Ernst and Ernst, 1976). This would indicate a productivity growth of three percent in real output per person which, based on past experience, tends to be reflected in the growth of real earnings for nearly all wage-earners. On the assumption that the long term rate of growth for the Peruvian economy will be three percent, we have increased our estimated rate of return by this amount.

Rate of Return for the Manucci School. Using the costs and benefits described above, the adjusted estimated rate of return for the Manucci school investment is ten percent per year. All tangible costs and benefits, both public and private are included in our estimate of net returns, including taxes that students will pay during their working life. Thus, our rate of return includes the costs and benefits to society and not just those to the individual students.

We believe that we have been conservative in our assumptions concerning the benefits from the Manucci school. The progress of the students has been remarkable and this training model has demonstrated that nearly all of the handicapped children can be trained to be productive. Since the rate of return to non-human investment in South America, such as industrial and water development projects, has averaged around 12 percent (Langoni, 1970) it is apparent that programs for the education of the handicapped, using the Manucci school model, are likely to offer relatively attractive investment returns for developing countries.

Footnotes

[1]It is defined as that rate of interest which will equate to zero the discounted net benefits. Thus, if the net benefits from investment in the school are B_t per year, extending over a period of n years, the rate of return (r) of this school is defined by solving the equation for r.

$$\sum_{t=1}^{n} \frac{B_t}{(1+r)^t} = 0$$

For a more detailed discussion of the rate of return method see Blaug (1970).

[2]The income of a maid is used to estimate the monetary value of the work of the handicapped because: (1) many of the trained handicapped perform work of this type; (2) most of those who perform other types of work will be working at approximately this same level of skill; and (3) the maid job is a common one in Trujillo making it possible to obtain a large sample of their pay scale. At this time a full-time live-in maid in Trujillo earns approximately $50.00 per month, including wages and the value of room, board, and health care.

[3]For a greater in depth presentation of these external effects see Schultz (1963) and Weisbrod (1964).

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